UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte ANTHONY J. GRZESIAK et al.

Appeal No. 2005-1979
Application No. 10/016,472

ON BRIEF

Before McQUADE, NASE, and BAHR, Administrative Patent Judges.

NASE, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection (mailed July 18, 2003) of claims 1, 4 to 9, 11 to 15 and 18 to 23, which are all of the claims pending in this application.[1]

We REVERSE.

[1] Claims 1, 9, 18, 19 and 23 were amended subsequent to the final rejection.

BACKGROUND

The appellants' invention relates generally to a brake band for an automatic transmission and, more particularly, to a brake band for an automatic transmission that employs a two-stage solenoid for providing an initial fast apply pressure to the band and then a PID controlled apply pressure to the band based on measurements of the brake drum speed and band loading (specification, p. 1). A copy of the claims under appeal is set forth in the appendix to the appellants' brief.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Guinn et al. (Guinn)	4,070,981	Jan. 31, 1978
Hatta et al. (Hatta)	5,003,842	Apr. 2, 1991
Reichert et al. (Reichert)	5,752,588	May 19, 1998
Hisano et al. (Hisano)	JP 11-264460[2]	Sept. 28, 1999

Claims 1, 7 and 8 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Reichert.

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[2] In determining the teachings of Hasano, we will rely on U.S. Patent No. 6,102,825 as an English equivalent of Hasano.

Claims 1, 7 and 8 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Hisano.

Claims 4, 5, 9, 11, 13, 18 to 21 and 23 stand rejected under 35 U.S.C. § 103 as being unpatentable over Reichert in view of Hatta.

Claims 4, 5, 13 to 15 and 18 to 23 stand rejected under 35 U.S.C. § 103 as being unpatentable over Hisano in view of Hatta.

Claim 6 stands rejected under 35 U.S.C. § 103 as being unpatentable over Reichert in view of Guinn.

Claim 6 stands rejected under 35 U.S.C. § 103 as being unpatentable over Hisano in view of Guinn.

Claim 12 stands rejected under 35 U.S.C. § 103 as being unpatentable over Reichert in view of Hatta and Guinn.

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellants regarding the above-noted rejections, we make reference to the answer

(mailed January 21, 2005) for the examiner's complete reasoning in support of the rejections, and to the brief (filed May 6, 2004) and reply brief (filed March 24, 2005) for the appellants' arguments thereagainst.

OPINION

In reaching our decision in this appeal, we have given careful consideration to the appellants' specification and claims, to the applied prior art references, and to the respective positions articulated by the appellants and the examiner. As a consequence of our review, we make the determinations which follow.

The anticipation rejections

We will not sustain the rejection of claims 1, 7 and 8 under 35 U.S.C. § 102(b) as being anticipated by Reichert. We likewise will not sustain the rejection of claims 1, 7 and 8 under 35 U.S.C. § 102(b) as being anticipated by Hisano.

Anticipation is established only when a single prior art reference discloses, expressly or under the principles of inherency, each and every element of a claimed invention. RCA Corp. v. Applied Digital Data Sys., Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984). In other words, there must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary

skill in the field of the invention. Scripps Clinic & Research Found. v. Genentech Inc., 927 F.2d 1565, 1576, 18 USPQ2d 1001, 1010 (Fed. Cir. 1991). If the prior art reference does not expressly set forth a particular element of the claim, that reference still may anticipate if that element is "inherent" in its disclosure. To establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient. See In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999).

Claim 1 reads as follows:

> A brake band mechanism for an automatic transmission having a brake drum, said mechanism comprising:
> a brake band encircling the brake drum, said brake band including opposing ends, said brake band operable to be compressed and expanded around the brake drum;
> a two-stage hydraulic servo; and
> a linkage coupled to said servo and said brake band, said servo activating said linkage to provide positive compression and expansion to said brake band for applying friction to the brake drum to control the speed of rotation of said brake drum;
> wherein said servo provides a rapid activation of said linkage during a first stage to rapidly expand said brake band, and a controlled compression and expansion of said brake band during a second stage.

Reichert's invention relates to the field of hydraulic servos for a friction brake of an automatic transmission for motor vehicles. Figure 1 shows a part of an automatic transmission of a motor vehicle in vertical section. The transmission includes a transmission housing 1, in the lower lateral region of which a cylinder 2 for a main piston 3 of the hydraulic servo is formed. The main piston 3, slidably fitted in the cylinder 2, is urged by a return spring set 4 in the direction of release of the hydraulic servo. The pressure chamber 5 of the hydraulic servo is bounded by a cover 6, which closes the cylinder 2. The pressure chamber 5 of the hydraulic servo can be pressurized through a pressure medium channel (not shown) which is disposed in the housing 1. A smaller cylinder 8 for a compensation piston 9 is disposed in a part of the main piston 3, the compensation piston 9 preferably being connected to a piston rod 10, which acts by way of an actuating lever 11 and a bracing member 12 on one end 13 of a brake band 14, the other end 15 of which is supported in known manner (not shown) in the housing 1. The compensation piston 9 is urged in the direction of release by means of a return spring 16.

Reichert's cylinder 8 and compensation piston 9 together form a compensation chamber 17, which is in communication with the pressure chamber 5 of the main piston 3 via a bore 18, in which a valve seat 19 for a ball valve 20 is located. In a radial stepped bore 22 in the main piston 3, which connects the pressure chamber 5 of the

main piston 3 with the compensation chamber 17, is arranged a stepped piston 23 which, together with the stepped bore 22, forms a discharge control valve for a discharge duct 25, by means of which discharge of pressure medium from the compensation chamber 17 can be controlled. The compensation piston 9 carries on its lower end a spring 21 which loads the ball 20 in the discharge state and ensures that the discharge control valve 24 first closes before the ball valve 20 opens.

Reichert teaches (column 1, lines 32-64) that:

> It is an object of the invention to provide an hydraulic servo with travel compensation, for friction brakes for shifting an automatic transmission for motor vehicles, in order, at the time of a shift, to minimize the volume of hydraulic fluid required to apply a friction brake to avoid an undesired pressure drop due to the volume of fluid which has to be made available.
>
> To this end, according to the invention, in an hydraulic servo of the kind referred to, a stepped bore connecting the pressure chamber to the compensation chamber is provided in the main piston, which forms a discharge control valve for a discharge duct controlling the discharge of pressure medium from the compensation chamber. The ball valve in the main piston opens when pressure is applied from the pressure chamber to the compensation chamber and closes when pressure is applied in the opposite direction. When an increase in pressure in the pressure chamber is initiated, the discharge duct is first closed by means of the stepped piston, ensured by the spring of the ball valve, and, as a result, the compensation piston is displaced in its cylinder by the pressure medium flowing in through the ball valve. The ball valve is closed as a result of the higher pressure in the compensation chamber due to the area ratio (the ratio of the area of pressure chamber to the area of compensation chamber), so that on further increase in pressure the main piston applies the brake band with torque capacity. Following relief of the pressure in the pressure chamber, the stepped piston opens the discharge duct, and the main piston and the compensation piston are returned to their starting positions. The return of the

main piston and the compensation pistons to their respective starting positions may be effected by respective return springs or sets of springs.

Hisano's invention relates to a control system for an automatic transmission. More specifically, it relates to a control system for reducing a shift shock during a down shift. As shown in Figure 1, a brake B-3 comprises a drum 31, a band 32, and a hydraulic servo 4. The drum 31 is interlocked to a sun gear s3. The band 32 comprises brackets 33 and 34 at each end on the outer periphery of the band 32. The anchor side bracket 33 is attached to an anchor pin 35 which is fixed to a case 10. An apply side bracket 34, on the pressure application side, is attached to the end of a piston rod 42 of the hydraulic servo 4. The elasticity of the band 32 in a direction for opening, i.e., toward the hydraulic servo 4, biases the bracket 34 to the piston rod 42. The hydraulic servo 4 of the brake B-3 comprises a servo cylinder 40 having cylinder bores S_L, S_S which have different diameters, a large diameter piston 44 slidably inserted in the large bore S_L, a small diameter piston 43 slidably inserted in the small bore S_S, a rod 42 inserted through both of the pistons 43 and 44 and always seated against or in contact with the small diameter piston 43, a separator spring 45 and a return spring 46 which are formed from compressed coil springs having different diameters, and a lid 41 covering an opening in the end of the large bore S_L. The rod 42 fixed against the small diameter piston 43 slidably protrudes through an end wall on the small bore S_S side of

the servo cylinder 40 and is attached to the bracket 34 of the band 32. The large diameter piston 44 is slidably retained by the rod 42. The separator spring 45 having a smaller diameter than the return spring 46 is arranged with a predetermined load setting between the small diameter piston 43 and the large diameter piston 44. The return spring 46 having a larger diameter than the separator spring 45 is arranged with a predetermined load setting between the end wall of the servo cylinder 40 and the large diameter piston 44.

Hisano teaches (column 3, lines 3-24) that:

> According to the invention, the rotation of the rotational element reduces to synchronize with the rotation of the rotational element at the low speed gear stage. That is, the rotation of the rotational element reduces to stop. In this case, the de-energizing operation occurs at the band brake. Therefore, the rotational element is not stopped from rotating by the band brake, because the engagement force occurred by the application of the aforementioned hydraulic pressure is small. After that, when the rotational element is stopped from rotating and then the reverse rotation of the rotational element is started, the self-energizing operation occurs. Therefore, the engagement force of the band brake steeply increases to stop the rotational element from rotating.
>
> In this case, the hydraulic pressure applied to the hydraulic servo of the band brake is the waiting pressure, which is lower for the predetermined amount than the hydraulic pressure to maintain the stop of the rotation of the rotational element. Therefore, the rotational element is not steeply stopped, that is, the rotation of the rotational element changes gradually.

The appellants argue throughout the brief and reply brief that neither Reichert nor Hisano disclose a two-stage hydraulic servo that "provides a rapid activation of said linkage during a first stage to rapidly expand said brake band, and a controlled compression and expansion of said brake band during a second stage" as recited in claim 1. It is the examiner's position (answer, pp. 4-5 and 9-10) that this limitation in inherently met by either Reichert's two-stage servo or Hisano's two-stage servo since the first piston (Reichert's piston 9; Hisano's piston 43) is smaller than the second piston (Reichert's piston 3; Hisano's piston 44) resulting in the first piston being operable to provide rapid movement of the brake band and the second piston being operable to provide fine adjustments of the brake band.

It is well settled that the burden of establishing a prima facie case of anticipation resides with the United States Patent and Trademark Office (USPTO). See In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984). In our view, the examiner's position that this limitation in inherently met by either Reichert's two-stage servo or Hisano's two-stage servo is pure speculation/conjecture unsupported by the disclosures of those references. As set forth above, anticipation may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient to establish anticipation under 35 U.S.C. § 102(b). In that regard, the mere fact that both Reichert's two-stage servo

and Hisano's two-stage servo have a small piston within a larger piston does not ipso facto mean that the small piston provides a rapid activation of the linkage to rapidly expand the brake band during a first stage of operation of the servo while the larger piston provides a controlled compression and expansion of the brake band during a second stage of operation of the servo. In that regard, other factors (e.g., fluid pressure) in addition to surface area play a role in determining how rapidly or slowly the small piston moves with respect to the speed of the larger piston.

For the reasons set forth above, the examiner has not established a prima facie case that claim 1 is anticipated by either Reichert or Hisano. Accordingly, the decision of the examiner to reject claim 1, and claims 7 and 8 dependent thereon, under 35 U.S.C. § 102(b) is reversed.

The obviousness rejections

We have reviewed the patents to Hatta and Guinn additionally applied in the rejection of claims 4 to 6, 9, 11, 12 to 15 and 18 to 23 but find nothing therein which makes up for the deficiency of either Reichert or Hisano discussed above regarding

claim 1.[3] Accordingly, we cannot sustain the examiner's rejection of appealed claims 4 to 6, 9, 11, 12 to 15 and 18 to 23 under 35 U.S.C. § 103.

CONCLUSION

To summarize, the decision of the examiner to reject claims 1, 7 and 8 under 35 U.S.C. § 102(b) is reversed and the decision of the examiner to reject claims 4 to 6, 9, 11, 12 to 15 and 18 to 23 under 35 U.S.C. § 103 is reversed.

REVERSED

JOHN P. McQUADE
Administrative Patent Judge)
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) BOARD OF PATENT
JEFFREY V. NASE) APPEALS
Administrative Patent Judge) AND
) INTERFERENCES
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JENNIFER D. BAHR)
Administrative Patent Judge)

[3] The limitation of claim 1 discussed above is also set forth in the other independent claims under appeal (i.e., claims 9 and 13).

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